

***LATRODECTUS HESPERUS* (ARANEAE: THERIDIIDAE) IN MAINE^{1,2}**

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ABSTRACT: A female and egg sac of the western black widow, *Latrodectus hesperus*, were introduced into Maine among household goods transported from Phoenix, Arizona. A total of 292 spiderlings emerged from the egg sac. Survival of offspring could have formed the nucleus of a breeding population.

Spiders are dispersed over great distances by aerial ballooning and by human transport (Gertsch 1979). Kaston (1983) referred to spiders transported by man from one area to another as anthropochores, and those species commonly associated with man as synanthropes. He further indicated that there is a close relation between the synanthropic and anthropochorous conditions, i.e., spiders closely associated with man's domiciles are most apt to be transported by commerce. Several species of anthropochorous synanthropes are of medical importance and include species of *Latrodectus* and *Loxosceles* (Kaston 1983). Here we describe long-range transport and introduction of a potentially dangerous spider into Maine.

On 22 October 1986, David W. Lister collected a female black widow spider inside a house on Cedar Street, Bangor, Penobscot County, Maine. The following day he examined household goods stored in the attic and found much spider webbing and an egg sac. The egg sac was in the hollow center of an automobile jack stand which previously had been placed outdoors in Arizona. Mr. Lister recently moved (19-29 September 1986) to Maine from his former residence in Phoenix, Maricopa County, Arizona.

After collection, the spider and egg sac were confined together in a small canning jar on 24 October and kept alive at room temperature. The spider spun a characteristic tangle web inside the jar and readily "accepted" the egg sac, i.e., she positioned the egg sac in her web, remained nearby, and changed the egg sac's location from lower to upper regions of the web. Six days later, on 30 October, young spiderlings had emerged from the egg sac.

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Spiderlings and adult female spider were killed and preserved in 75% ethanol on 3 November 1986.

The female spider and spiderlings were identified by the senior author as *Latrodectus hesperus* Chamberlin and Ivie. This species is known as the western widow spider (MacKay 1982), or the western black widow (Gertsch 1979), and is found in the western United States and eastward into west Texas (Kaston 1970; Allred and Kaston 1983) and western Canadian provinces (Chamberlin and Ivie 1935; Kaston 1970).

The female *L. hesperus* collected in Bangor, Maine, measured about 11 mm in body length. Kaston (1970) reported that females of *hesperus* were the largest among the three species of black widows found in the United States (*L. mactans*, (Fabricius), *L. variolus* Walckenaer, and *L. hesperus*); he noted that *hesperus* females ranged from 8 to 15.5 mm, with most from 10.5 to 13 mm. [In addition to three species of black widows, the red widow (*Latrodectus bishopi* Kaston) and the brown widow (*Latrodectus geometricus* C.L. Koch) also are found in the United States (Kaston 1970)].

The female's epigynum was dissected and internal structures examined. The connecting ducts (bursae copulatrices) had three outside coils and the heavily sclerotized spermathecae were dumbbell shaped. Although both *L. hesperus* and *L. variolus* have three outside coils while *L. mactans* has four (Kaston 1970), *hesperus* generally can be distinguished from *variolus* by the absence of dorsal abdominal markings. *L. variolus* has a row of middorsal red spots and diagonal white stripes on the abdomen (Kaston 1970).

The collected egg sac was pear-shaped, about 12 mm in height and 10 mm in diameter, and creamy white in color. Kaston (1970) described the egg sacs of *L. hesperus* as pear-shaped, 13 or 14 mm in height, 10 or 12 mm in diameter, and creamy yellow to light tan. The exact date of oviposition and egg-sac spinning are unknown for the Maine-collected sac; Kaston (1970) indicated the average time from oviposition to emergence was 30.3 ± 2.8 days for *L. hesperus* reared in the laboratory.

A total of 292 spiderlings emerged from the egg sac. [For *L. hesperus*, Kaston (1970) reported that the number of eggs per sac commonly ranged from 160 to 225, with an observed maximum of 598. This species also spins more than one egg sac (maximum 21)]. Mean carapace width of the first postemergence instars was 0.48 ± 0.01 mm (S.D.), $n = 50$. The spiderlings characteristically were marked with two rows of black spots extending along the dorsum of the abdomen. These and other markings (Kaston 1970) confirmed species identification of the *L. hesperus* spiderlings.

For *L. mactans hesperus* (= *L. hesperus*) in Utah, Chamberlin and Ivie (1935) noted that although young hatched late in the season may overwinter in the immature condition, most overwintering individuals were adults.

MacKay (1982) indicated that *L. hesperus* overwinters as spiderlings in California.

The female *L. hesperus*, egg sac, and young spiderlings are deposited in the arachnid collections of the U.S. National Museum of Natural History, Washington, D.C.

The neurotoxic symptoms of black widow spider bites are well known. Gertsch (1979) described the bite of *L. hesperus* as producing intense pain followed by other symptoms including nausea and vomiting, faintness, dizziness, tremors, loss of muscle tone, and shock. Respiration may be strongly affected, followed by cyanosis and prostration, and, in some instances, death. Most victims were bitten by female widow spiders, though Allred (1974) reported a bite by a subadult male of *L. hesperus*. The species introduced into Maine, *L. hesperus*, has been described as the most dangerous spider in Arizona (Randall 1982).

Despite numerous alleged spider-bite cases in Maine (some 25 cases since 1976 requiring medical attention), none has been directly associated with specimens of black widows, or with specimens of the brown recluse (*Loxosceles reclusa* Gertsch & Mulaik) (McDaniel and Jennings 1983). There is only one previous report of *Latrodectus* spiders being collected in Maine; Kaston (1954) examined a specimen collected on 25 October 1953 at Gorham, Cumberland County, Maine. He noted that the specimen differed from *L. mactans* by the absence of a red spot above the anal tubercle, and that the spider was entirely black except for two very small spots in the middorsal line on the anterior half of the abdomen — a color pattern similar to that of *L. variolus*. Although Thorp and Woodson (1945) included one report of a black widow bite in Maine (1726 to 1943), Kaston (1954, p. 193) refuted their claim, noting that the “record was an error, presumably based upon a misidentification.” If Maine has an indigenous species of *Latrodectus*, it probably is the northern black widow, *L. variolus*. Levi (1959) recorded *L. curacaviensis* (Muller), now considered *L. variolus* (see Kaston 1970), from various locations in southern Vermont and New Hampshire.

This collection of *L. hesperus* female, egg sac, and emergent spiderlings represents the second example of a medically important spider accidentally introduced into Maine. Earlier, we described the collection of another anthropochorous synanthrope, *Loxosceles reclusa*, brought into Maine from Oklahoma (McDaniel and Jennings 1983). In neither case have breeding populations of these potentially dangerous spiders become established. However, the introduction of impregnated female spiders or their egg sacs (as described here) poses a potential threat of successful establishment, especially when the spiders or egg sacs are confined indoors. We suspect that, without discovery, capture, confinement, and eventual

destruction, the female and young spiderlings could have survived the Maine winter indoors in an insulated but unheated attic (estimated temperature 10°C). Depending upon available food, survivorship, and mating potential, offspring that reached maturity could have formed the nucleus of a breeding population in Maine.

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